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(54) **ROLLER BLINDS WITH ADJUSTABLE SLATS INSTALLED ON STANDARD GUIDES IN SITU**

ROLLLADEN MIT VERSTELLBAREN, VOR ORT AUF STANDARDFÜHRUNGEN INSTALLIERTEN LAMELLEN

STORES À LAMELLES AJUSTABLES INSTALLÉS SUR DES GUIDES STANDARD IN SITU

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(56) References cited:
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Description

TECHNICAL FIELD

[0001] This invention relates to a roller blind of the type with adjustable slats, which can be installed on standard guides, that is, on guides already installed for moving slats and in situ.

[0002] It relates to a roller blind designed to close doors or windows, or French windows, making it possible to achieve the adjustment and the opening to an adjustable angle of the slats with the roller blind lowered in such a way that, with the slats open, the change of air and the passage of light from the outside is obtained.

[0003] Compared with prior art solutions, the roller blind with adjustable slats according to this invention offers the advantage of being able to be installed on existing guides and the mechanical means which allow the adjustment of the slats which make up the roller blind, are, unlike the traditional solutions which during the steps for adjusting the slats place the movement mechanism in view, of the concealed type, making this solution even more attractive to the customers for whom the product is intended.

[0004] This invention is applied in the field of the industry which produces doors and windows, roller blinds and Venetian blinds both for household use and, more generally, in the civil and industrial sector.

BACKGROUND ART

[0005] As is known, a roller blind comprises a plurality of slats connected to each other with angular freedom, slidable on lateral guides for the sliding of the roller blind when opening and closing, and windable relative to a winding roller located at the top in a suitable compartment; the roller can be actuated manually or by a drive unit.

[0006] The use is currently known of roller blinds whose slats are of the adjustable type to allow, as necessary, the passage of air and/or light, where the adjustment of the slats is carried out by a mechanical device kinematically connected to a source of motion, that is, a mechanical system for transmission of the rotary movement from one slat to the other.

[0007] The various solutions of roller blinds with adjustable slats known in the prior art includes the Italian patent application MT2009A000001 which describes a roller blind characterised in that may also be installed on existing guides and that the adjustment of the slats does not require any movement mechanism, using for the opening of a slat only the weight force of the slats above.

[0008] This principle on which the opening operation of the slats of the above-mentioned patent is based presents a first drawback deriving from the fact that the upper slats may not open, due both to the small value of the moment of the weight force and the limited weight of the few slats above.

[0009] Moreover, the slats described in the above-mentioned document, which can also be installed on existing guides, are not adjusted simultaneously but in succession starting from the lower ones and then progressively the upper ones, giving priority to the entrance of light and air in the lower zone thus contravening the consolidated practice and also an evident usefulness of giving a priority and greater entrance of light in the upper zone.

[0010] According to the solution of Italian patent application MO97A000208 there is also the lifting and closing of the roller blind curtain, as well as the variation of the degree of opening of the individual slats constituting the curtain, using drive means connected mechanically to the winding roller, comprising two or more slats of harmonic steel and in any case made of flexible materials and designed to support the weight of the entire blind curtain connected to all the slats. Basically, it is the reproposal of the prior art applied to the operation of Venetian blinds.

[0011] The main drawback of this system, according to which the roller blind may be installed on existing guides, is the fact that the slats are located on the inside of the Venetian blind curtain and are therefore unattractive in all the operation steps.

[0012] There are also prior art roller blinds with adjustable slats on the market which can be installed on existing guides and which comprise a mechanism for moving the slats, which, however, during adjustment of the slats, place the movement mechanism in view, thereby compromising the appearance the product.

[0013] In the solution according to patent document EP-A-2722475, filed in the name of the same applicant as this invention, the system for sliding and rotating the adjustable slats is installed on specially prepared guides (indicated with 'M' in Figure 22), with the drawback of preventing the use of the existing guides and with the need to replace them with dedicated guides, if necessary intervening with modifications also to the masonry.

DESCRIPTION OF THE INVENTION

[0014] EP-A-2722475 discloses a roller blind of the type with adjustable slats, which can be installed on at least one guide even of the universal type, that is, on guides already installed for moving slats and in situ, the roller blind comprising slats which are connected to each other, with freedom to oscillate in an angular fashion, wherein said roller blind further comprising first supports, second components of the chain type, third components or rod linked by screws and protrusions. The aim of this invention is to provide a roller blind with adjustable slats which can overcome the above-mentioned drawbacks and which can also be installed on existing guides, thus creating a condition which is able to prevent the replacement of the guides.

[0015] Moreover, the invention also aims to provide a roller blind with adjustable slats which is easy to make

and apply on existing guides, as well as with a reduced number of components, so as to be easily produced at advantageous costs.

[0016] This is achieved by means of a roller blind with adjustable slats whose features are described in the main claim.

[0017] The dependent claims of the solution according to this invention describe advantageous embodiments of the invention.

[0018] The main advantages of this solution relate to the fact that, on the one hand, the installation on existing guides is allowed, avoiding the costs for their replacement, and moreover comprising mechanisms for angular adjustment of the slats which are, on the one hand, extremely reliable and, on the other, remain hidden from view, with all the resulting advantages, both practical and in terms of appearance of the finished product.

DESCRIPTION OF THE DRAWINGS

[0019] Other features and advantages of the invention will become clear on reading the description given below of one embodiment, provided as a non-limiting example, with the help of the accompanying drawings, in which:

- Figure 1 shows a schematic and perspective exploded view of the components used according to the invention;
- Figures 2 to 5 are schematic views highlighting a supporting component which is placed at both ends of each slat and which in turn is inserted in a slidable chain link component in the guide;
- Figures 6 to 9 relate to a chain link component which slides, connected to other chain link components, in the guide;
- Figures 10 and 11 are front and side views, respectively, of a component or rod which determines the angular movement of the slats since it is operatively integral with each component of the chain;
- Figures 12, 13 and 14 are respective the views of the three components of the present invention, that is, respectively, the slat support, the chain and the rod;
- Figures 15 to 18 illustrate schematic views of four of the numerous possible intermediate positions, from completely closed to completely open, which each slat may adopt actuated by each chain link component, using each rod;
- Figures 19 and 20 are cross-section views of two possible profiles to be inserted if the dimensions are greater than those necessary for the correct operation of the movement mechanism of the roller blind;
- Figure 21 shows an upper pushing chain which is connected on one side to rods which slide in the fixed profile and on the other to the winding roller, the rods determining the angular movement of the slats;
- Figure 22 is a schematic view highlighting the solution according to patent document EP-A-2722475, according to which the mechanical components which allow the movement of the slats are housed in a dedicated guide, labelled "M" in the drawing.

DESCRIPTION OF A FORM OF EMBODIMENT OF THE INVENTION

[0020] With reference to the accompanying drawings, reference sign 30 denotes the slats which make up a roller blind with adjustable slats according to the invention, which are connected to each other, with freedom of angular oscillation.

[0021] The features of the invention relate to, on the other hand, the structure and the use of the following components:

a) first components or supports 31 which are inserted on each of the ends of a slat 30 of a roller blind, for a total of two specular supports for each slat;
b) second components of the chain link type 32 which run, connected to each other, in a guide 33;
c) third components or rods 34, which, sliding inside the guide 33, act in conjunction with a pin 39 of the chain link element, allowing the angular movement of the slats 30 by the angular movement of the supports 31.

[0022] Each support 31 substantially consists of an elongated body which, from the side facing towards the slat 30 has a shape with protrusions 35 and grooves designed to allow the coupling in an interlocking fashion with each of the ends of each slat 30, whilst from the side facing towards the chain there is a pin 36 positioned at right angles to the body and facing, that is, towards the respective chain link 32 in which it is intended to be inserted.

[0023] Moreover, the support 31, at the side facing the chain link component 32 and close to the pin 36, has, as shown in Figures 2 to 5, a groove 37 suitably shaped to guarantee optimum operation and which, in the embodiment illustrated, substantially adopts a "

[0024] J" shape, also designed to act in conjunction with elements provided in the corresponding chain link component 32, as described below.

[0025] As shown in Figures from 6 to 9, each second component, represented by the chain link component 32, which is elongate in shape with dimensions substantially equivalent to those of a support 31, which in turn substantially corresponds to the dimensions in height of a slat 30, comprises a through slot 38 and a pin 39.

[0026] The through slot 38 is passed through, in situ, by the pin 36 of support 31, whilst the pin 39 is designed to enter in the groove 37 shaped like a 'J' of the support 31.

[0027] Lastly, each rod 34 consists of a metal element with an elongated shape, also with dimensions substantially corresponding to those of chain link component 32 and of support 31; the rods 34 are joined to each other

at the articulated fastening joints 40, located at the two ends of each of the rods, to form a continuous succession of rods which slide in the guides 33.

[0028] As shown in Figures 10 and 11, each of the rods 34 comprises a hole 41 the purpose of which is to be intercepted by pin 36 of support 31 which passes through the elongated slot 38 of the chain link component 32.

[0029] From an operational point of view, the roller blind with adjustable slats according to the invention operates as follows.

[0030] When the roller blind is lifted in any intermediate position, the slats are all positioned in the closed position, and during this step, shown in Figure 15, pin 36 of support 31 passes through slot 38 remaining in the highest position relative to the latter, and at the same time pin 39 of chain 32 remains inserted in the lower end of groove 37 of support 31.

[0031] Once the roller blind is completely lowered, the vertical stroke of the chains 12 stops due to the presence of support 45 (Figure 1) of a compensator profile 46 which is not adjustable and which cannot slide vertically since it is in contact with the lower sill of the door or window unit created in the masonry, in which the roller blind is inserted.

[0032] In the same way, the vertical stroke of the supports 31 and of the slats 30 stops, whilst the stroke of the rods 34 continues which, only them, can move further downwards.

[0033] The further downward movement of the rods 34 determines the consequent downwards movement of pin 36 of each support 31, since it is inserted in the hole 41 of the rods through the elongated slot 38 of the chain 32 which in this step remains stationary. In this way, the angular movement of support 31 and of the respective slat 30 starts, as support 31 is constrained only by the pin 39 inserted in the groove 37, the shape of which acts as a lever for the angular movement of the slats 30.

[0034] Continuing their stroke downwards (Figures 16 and 17) the rods 34 push pin 36 increasingly downwards which will move towards the lower area the slot 38, while pin 39, sliding indirectly in the groove 37, causes the consequent increase in the angular movement of support 31 and of the corresponding slat 30, reaching the position illustrated in Figure 18, wherein pin 36 has reached the bottom end of slot 38 and pin 39 has reached the upper end of groove 37.

[0035] The step of closing the slats will then be determined by lifting the rods 34 which will cause the opposite effect, pulling pin 36 upwards, which, at the end of the stroke, will reach the initial closing position of the slats 30.

[0036] As may be noted, the mechanical components which determine the angular movement of the slats are kept concealed in the existing guides 33, so that none of the mechanical components are visible from the outside, to the advantage of the final appearance.

[0037] According to the invention, if the dimensions of the sliding seat 42 of the existing guides 33 are greater than those provided for the correct and optimum operation of the mechanism, special profiles can be used, two of which are indicated with reference signs 43 and 43a, for example, in Figures 19 and 20, the profiles being shaped so that they can be fixed inside the sliding seat of the existing guide, returning the dimensions to those necessary for use of the system described.

[0038] It should be noted that the functionality of the roller blind according to the invention is similar to that described and claimed in patent document EP-A-2722475, which, however, requires the presence of a dedicated guide profile.

[0039] The invention as described above refers to a preferred embodiment. It is nevertheless clear that the invention is susceptible to numerous variations falling within the scope of the claims.

Claims

1. A roller blind of the type with adjustable slats, which can be installed on at least one guide (33) even of the universal type, that is, on guides already installed for moving slats and in situ, the roller blind comprising slats (30) which are connected to each other, with freedom to oscillate in an angular fashion, wherein said roller blind further comprises the following components for sliding the roller blind in the guides (33) and for obtaining the angular movement of each slat (30):

   A. first components or supports (31) each of which is inserted on each of the ends of each slat (30), for a total of two specular supports for each slat, each support being provided with a pin (36) facing in situ towards the guide and a groove (37) of predetermined shape;
   B. second components (32) of the chain link type which run, connected to each other, in the guide (33), each chain link component comprising a through slot (38) which is passed through, in situ, by a pin (36) of a support (31), as well as another pin (39) that is inserted, in situ, into the groove (37) of a support (31); and
   C. third components or rods (34) joined to each other at both ends thereof to form a succession of rods (34) sliding inside the guide (33), each rod (34) being provided with a hole (41) hosting, in situ, an end of said pin (36) of a support (31), whereby the movement of said rods (34) in conjunction with a pin (39) of a chain link component (32), allows an angular movement of the slats (30) by an angular movement of the supports (31).

2. A roller blind according to claim 1, **characterised in that** each support (31) substantially consists of an elongated body which, from the side facing towards the slat (30) has a shape with protrusions (35) and

grooves designed to allow the coupling in an interlocking fashion with each of the ends of each slat (30).

3. A roller blind according to claim 1, **characterised in that** the groove (37) of the supports (31) is substantially J-shaped.

4. A roller blind according to claim 3, **characterised in that** the through slot (38) of each chain link component (32) is crossed, in situ, by the pin (36) of the support (31), whilst said another pin (39) is designed to enter in the groove (37) of the support (31).

5. A roller blind according to any one of the preceding claims, **characterised in that** each rod (34) consists of a metal element with an elongated shape, with dimensions substantially corresponding to those of the chain link element (32) and of the support (31), and which is associated with corresponding rods (34) joined to each other at the articulated fastening joints (40), located at the two ends of each of the rods, to form a continuous succession of rods which slide in the guides (33) .

6. A roller blind according to any one of the preceding claims, **characterised in that**, if the sliding seat (42) of the existing guides (33) has dimensions greater than those provided for the correct and optimum operation of the mechanism, it also comprises suitable profiles (43, 43a), the profiles being shaped so that they are fixed inside the sliding seat of the existing guide.

Patentansprüche

1. Rollladen vom Typ mit verstellbaren Lamellen, die an mindestens einer Führung (33) sogar vom Universaltyp montiert werden können, d. h. an Führungen, die bereits zum Bewegen von Lamellen und vor Ort montiert sind, wobei der Rollladen Lamellen (30) umfasst, die miteinander verbunden sind und frei winkelig schwingen können, wobei ein jeder Rollladen zudem die folgenden Komponenten umfasst, um den Rollladen in den Führungen (33) zu verschieben und um die Winkelbewegung einer jeden Lamelle (30) zu erhalten:

   A. erste Komponenten oder Halterungen (31), die jeweils an einem jeden der Enden einer jeden Lamelle (30) eingesetzt sind in einer Zahl von insgesamt zwei spiegelgleich angeordneten Halterungen pro Lamelle, wobei einer jede Halterung mit einem Zapfen (36) versehen ist, der vor Ort der Führung zugewandt ist, und einer Rille (37) einer vorgegebenen Form;
   B. zweite Komponenten (32) vom Kettenverbindungstyp, die verbunden miteinander in der Führung (33) gleiten, wobei ein jedes Kettenverbindungsbauteil eine Durchführungsaussparung (38) aufweist, durch die vor Ort ein Zapfen (36) einer Halterung (31) führt, sowie einen weiteren Zapfen (39), der vor Ort in die Rille (37) einer Halterung (31) eingefügt ist, und
   C. dritte Komponenten oder Stangen (34), die an ihren beiden Enden aneinander angefügt sind, um eine Abfolge von Stangen (34) zu bilden, die in der Führung (33) gleiten, wobei eine jede Stange (34) mit einem Loch (41) versehen ist, das vor Ort ein Ende des Zapfens (36) einer Halterung (31) aufnimmt, wodurch die Bewegung der Stangen (34) in Verbindung mit einem Zapfen (39) eines Kettenverbindungsbauteils (32) eine Winkelbewegung der Lamellen (30) durch eine Winkelbewegung der Halterungen (31) erlaubt.

2. Rollladen nach Anspruch 1, **dadurch gekennzeichnet, dass** eine jede Halterung (31) im Wesentlichen aus einem lang gestreckten Körper besteht, der von der Seite, die der Lamelle (30) zugewandt ist, eine Form mit Vorsprüngen (35) und Rillen aufweist, ausgestaltet, um die Kupplung in einer Verriegelungsform mit einem jeden der Enden einer jeden Lamelle (30) zu erlauben.

3. Rollladen nach Anspruch 1, **dadurch gekennzeichnet, dass** die Rille (37) der Halterungen (31) im Wesentlichen J-förmig ist.

4. Rollladen nach Anspruch 3, **dadurch gekennzeichnet, dass** die Durchführungsaussparung (38) eines jeden Kettenverbindungsbauteils (32) vor Ort vom Zapfen (36) der Halterung (31) gekreuzt wird, während der andere Zapfen (39) ausgestaltet ist, um in die Rille (37) der Halterung (31) einzutreten.

5. Rollladen nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** eine jede Stange (34) aus einem Metallelement mit lang gestreckter Form besteht, mit Abmessungen, die im Wesentlichen denen des Kettenverbindungselements (32) und der Halterung (31) entsprechen, und das mit entsprechenden Stangen (34) assoziiert ist, die an den Gelenkbefestigungskupplungen (40) aneinander angefügt sind, befindlich an den zwei Enden einer jeden der Stangen, um eine durchgehende Abfolge an Stangen zu formen, die in den Führungen (33) gleiten.

6. Rollladen nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** er, wenn der Gleitsitz (42) der bestehenden Führungen (33) Abmessungen aufweist, die größer sind als jene, die für den einwandfreien und optimalen Betrieb des Me-

chanismus bereitgestellt sind, auch geeignete Profile (43, 43a) umfasst, wobei die Profile so geformt sind, dass sie im Gleitsitz der bestehenden Führung fixiert sind.

Revendications

1. Store du type à lamelles ajustables pouvant être installé sur au moins un guide (33) même de type universel, c'est-à-dire sur des guides déjà installés pour déplacer les lamelles et in situ, le store comprenant des lamelles (30) étant raccordées les unes aux autres avec un degré de liberté pour osciller d'une façon angulaire, dans lequel ledit store comprend de plus les éléments suivants pour faire coulisser le store dans les guides (33) et pour obtenir le mouvement angulaire de chaque lamelle (30) :

   A. des premiers éléments ou supports (31) chacun étant introduits dans chacune des extrémités de chaque lamelle (30), pour un total de deux supports en miroir pour chaque lamelle, chaque support étant pourvu d'un axe (36) faisant face in situ vers le guide et une rainure (37) de forme prédéterminée ;
   B. des seconds éléments (32) du type maillon de chaîne qui circulent, raccordés les uns aux autres, dans le guide (33), chaque élément en maillon de chaîne comprenant une fente passante (38) étant traversée, in situ, par un axe (36) d'un support (31), de même qu'un autre axe (39) étant introduit, in situ, dans la rainure (37) d'un support (31) ; et
   C. des troisièmes éléments ou tiges (34) assemblées les unes aux autres à leurs deux extrémités pour former une succession de tiges (34) coulissant à l'intérieur du guide (33), chaque tige (34) étant pourvue d'un orifice (41) logeant, in situ, une extrémité dudit axe (36) d'un support (31), par lequel le mouvement desdites tiges (34), conjointement à un axe (39) d'un élément en maillon de chaîne (32), permet un mouvement angulaire des lamelles (30) par un mouvement angulaire des supports (31).

2. Store selon la revendication 1, **caractérisé en ce que** chaque support (31) consiste substantiellement en un corps allongé qui, à partir du côté orienté vers la lamelle (30), possède une forme avec des saillies (35) et des rainures conçues pour permettre l'accouplement de façon imbriquée avec chaque des extrémités de chaque lamelle (30).

3. Store selon la revendication 1, **caractérisé en ce que** la rainure (37) des supports (31) a une forme substantiellement en « J ».

4. Store selon la revendication 3, **caractérisé en ce que** la fente passante (38) de chaque élément en maillon de chaîne (32) est traversée, in situ, par l'axe (36) du support (31), pendant que ledit autre axe (39) est conçu pour entrer dans la rainure (37) du support (31).

5. Store selon l'une quelconque des revendications précédentes, **caractérisé en ce que** chaque tige (34) consiste en un élément métallique ayant une forme allongée, avec des dimensions correspondant substantiellement à celles de l'élément en maillon de chaîne (32) et du support (31), et étant associé aux tiges correspondantes (34) associées les unes aux autres en correspondance de joints de fixation articulés (40) situés aux deux extrémités de chacune des tiges, pour former une succession continue de tiges coulissant dans les guides (33) .

6. Store selon l'une quelconque des revendications précédentes, **caractérisé en ce que**, si le siège coulissant (42) des guides existants (33) comporte des dimensions supérieures à celles prévues pour un fonctionnement correct et optimal du mécanisme, il comprend également des profils appropriés (43, 43a), les profils étant façonnés de manière à ce qu'ils soient fixes à l'intérieur du siège coulissant du guide existant.

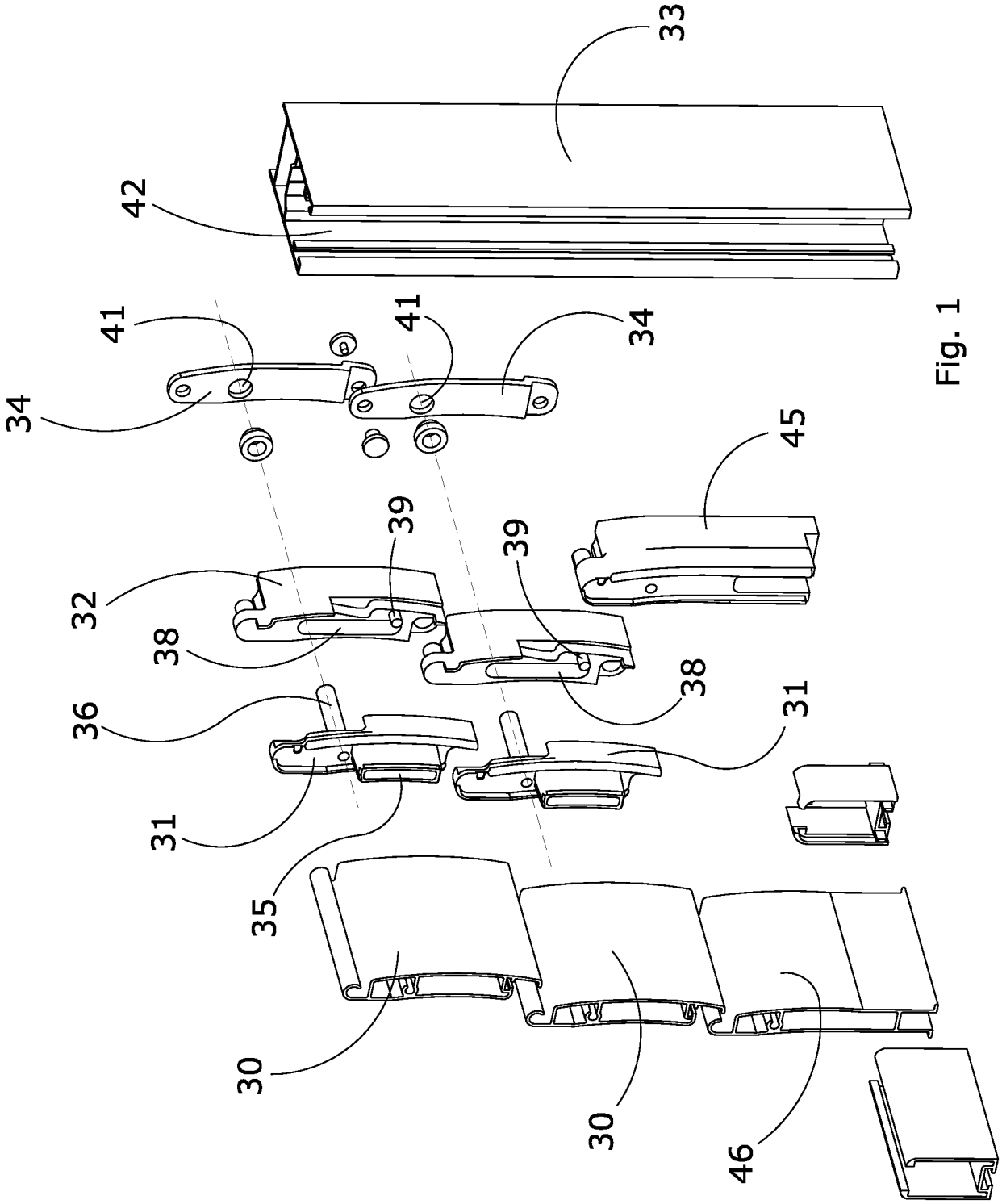


Fig. 1

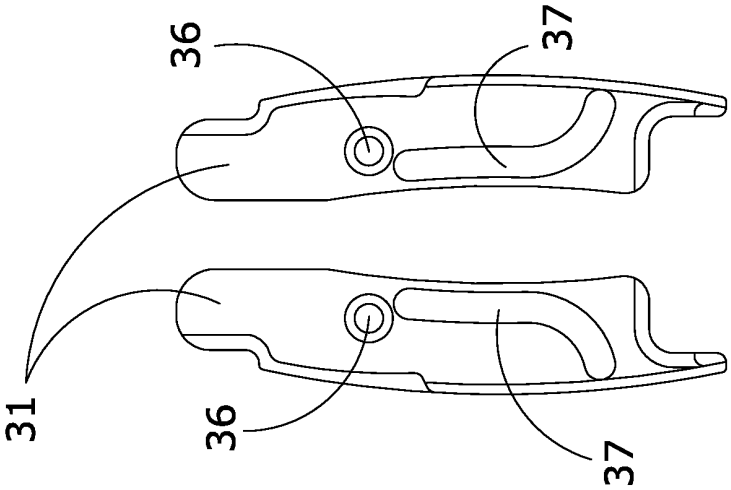


Fig. 5

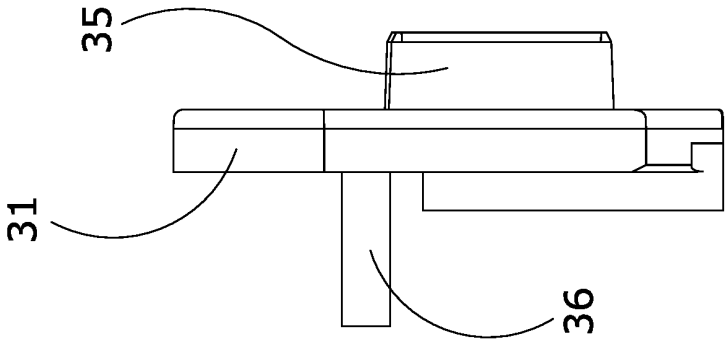


Fig. 4

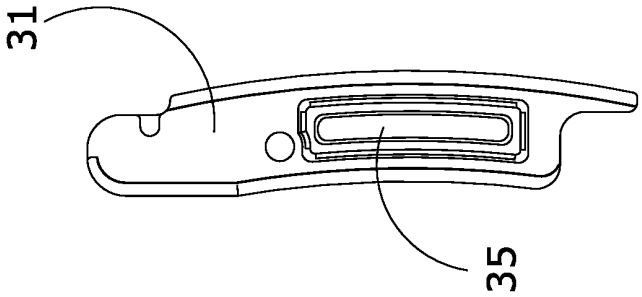


Fig. 3

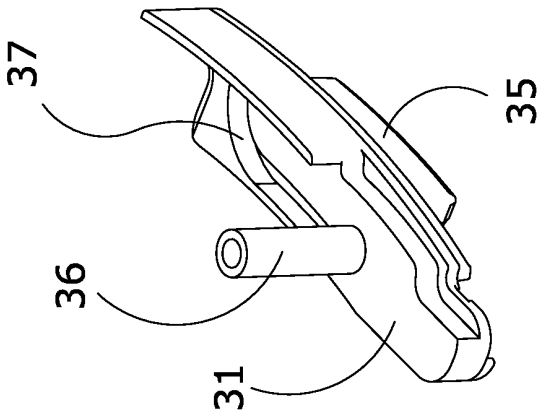


Fig. 2

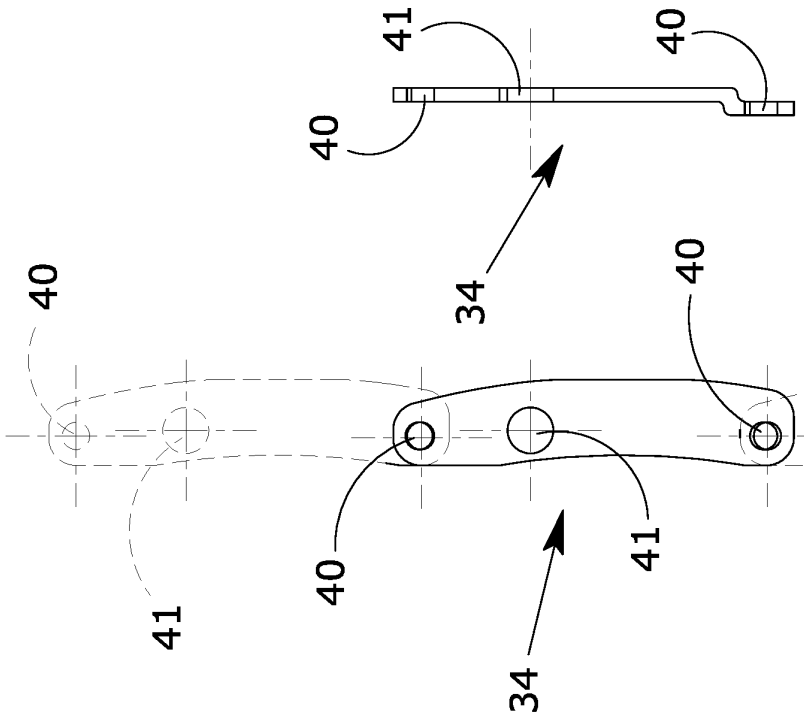


Fig. 11

Fig. 10

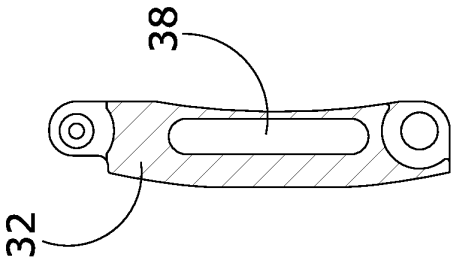


Fig. 9

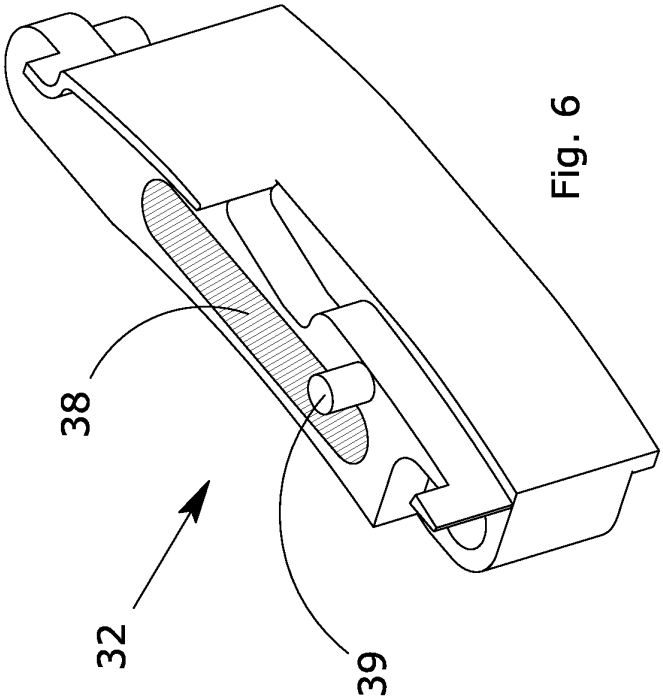


Fig. 6

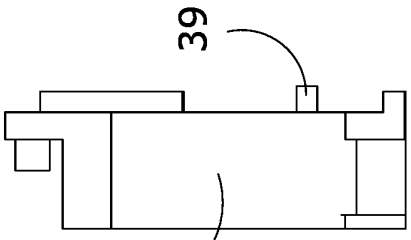


Fig. 8

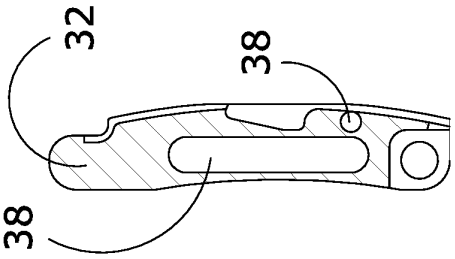
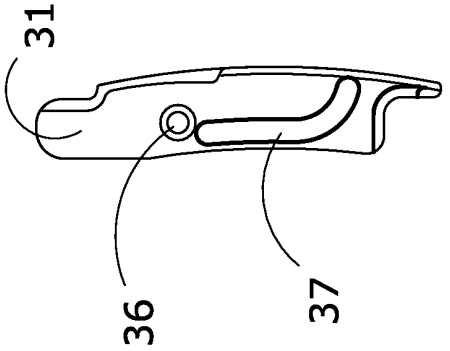


Fig. 7



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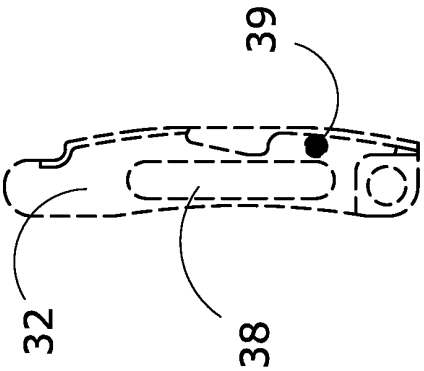
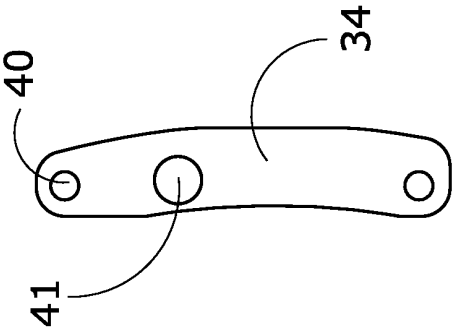


Fig. 13



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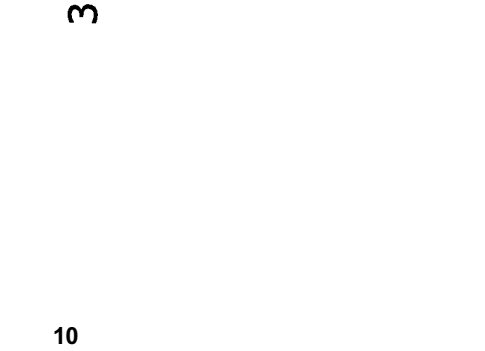

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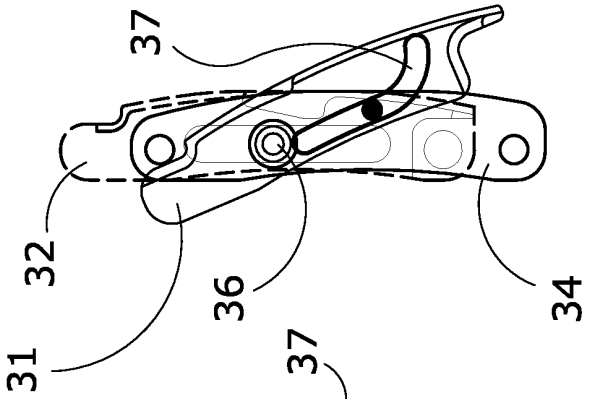
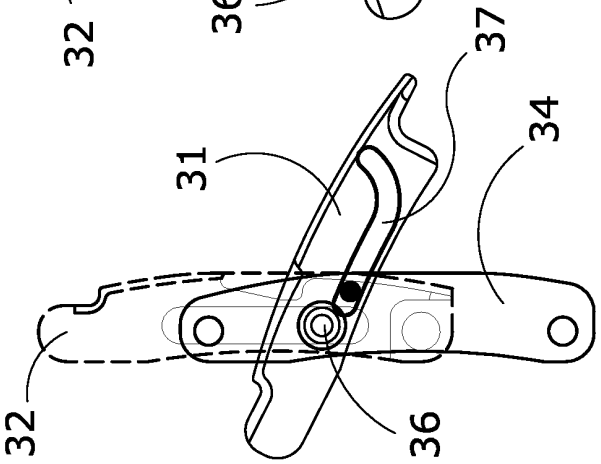


Fig. 16



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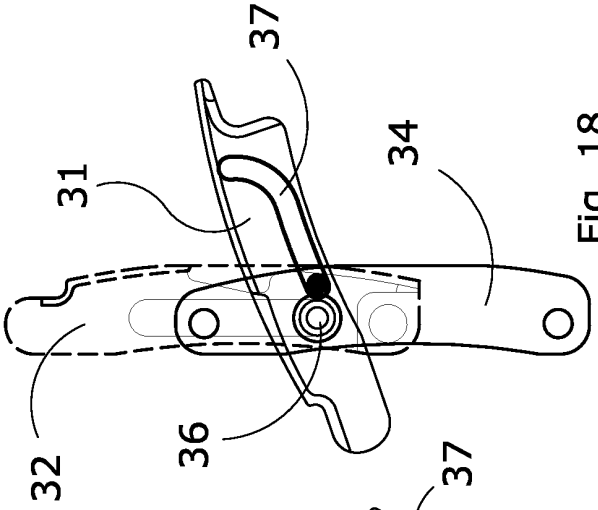

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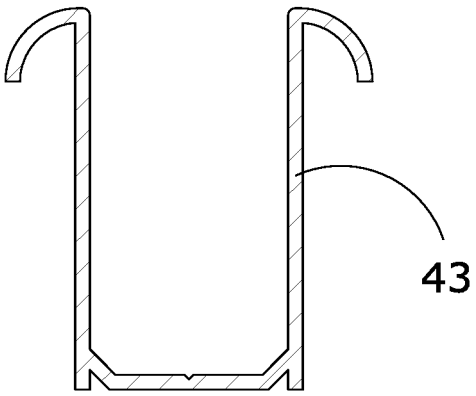

Fig. 19

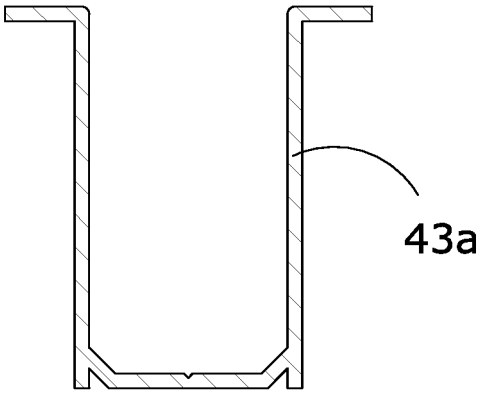

Fig. 20

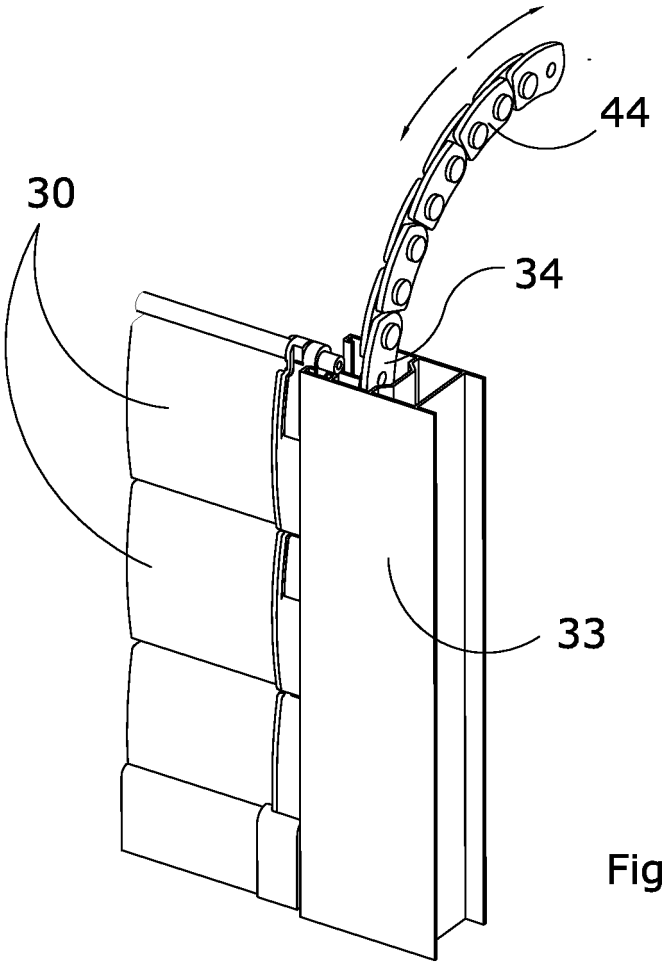

Fig. 21

PRIOR ART

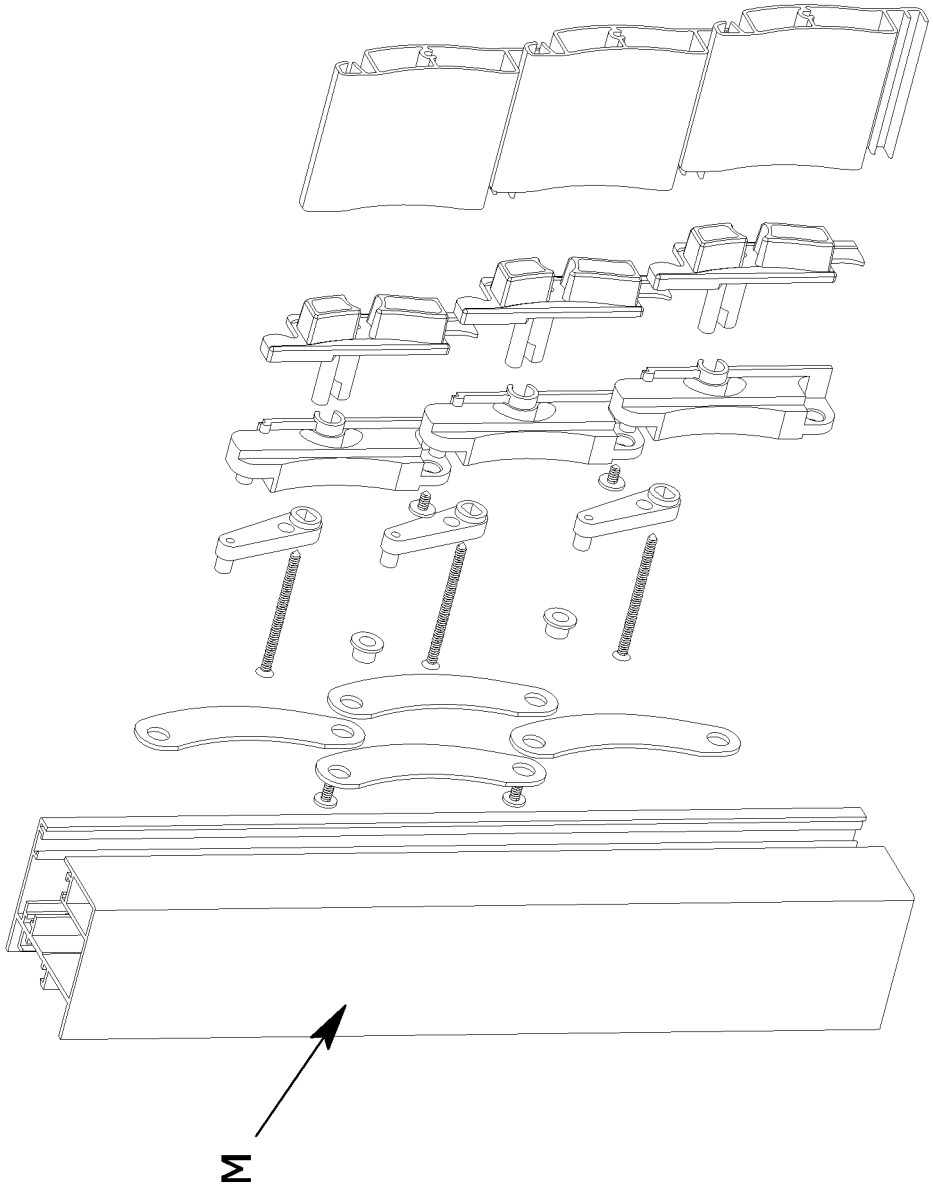

Fig. 22

REFERENCES CITED IN THE DESCRIPTION

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